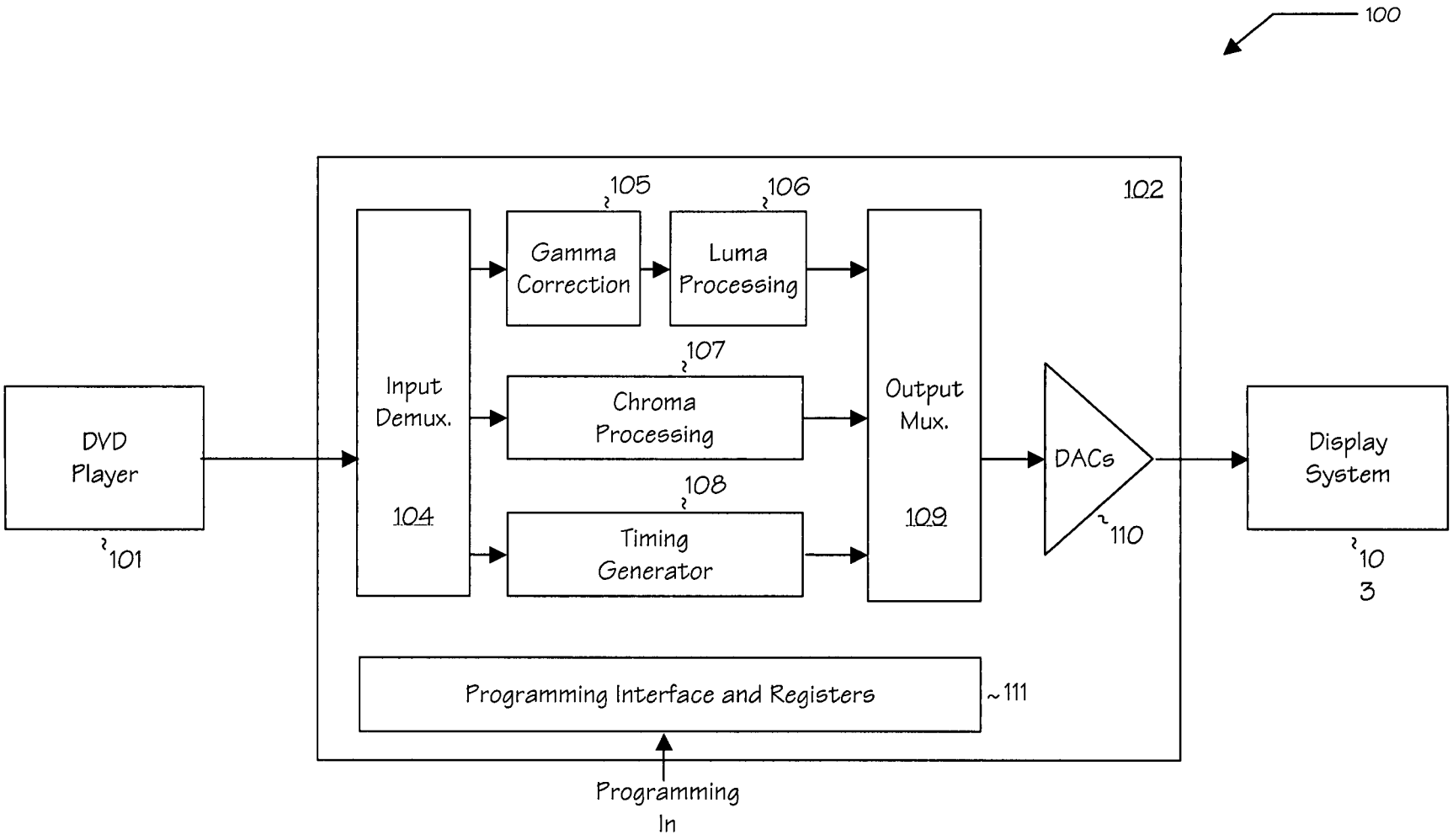

100
102
105
106
Gamma Correction
Luma Processing
107
Chroma Processing
108
Timing Generator
Input Demux.
104
Output Mux.
109
DACs
110
DVD Player
101
Display System
103
Programming Interface and Registers
111
Programming In

Fig. 1

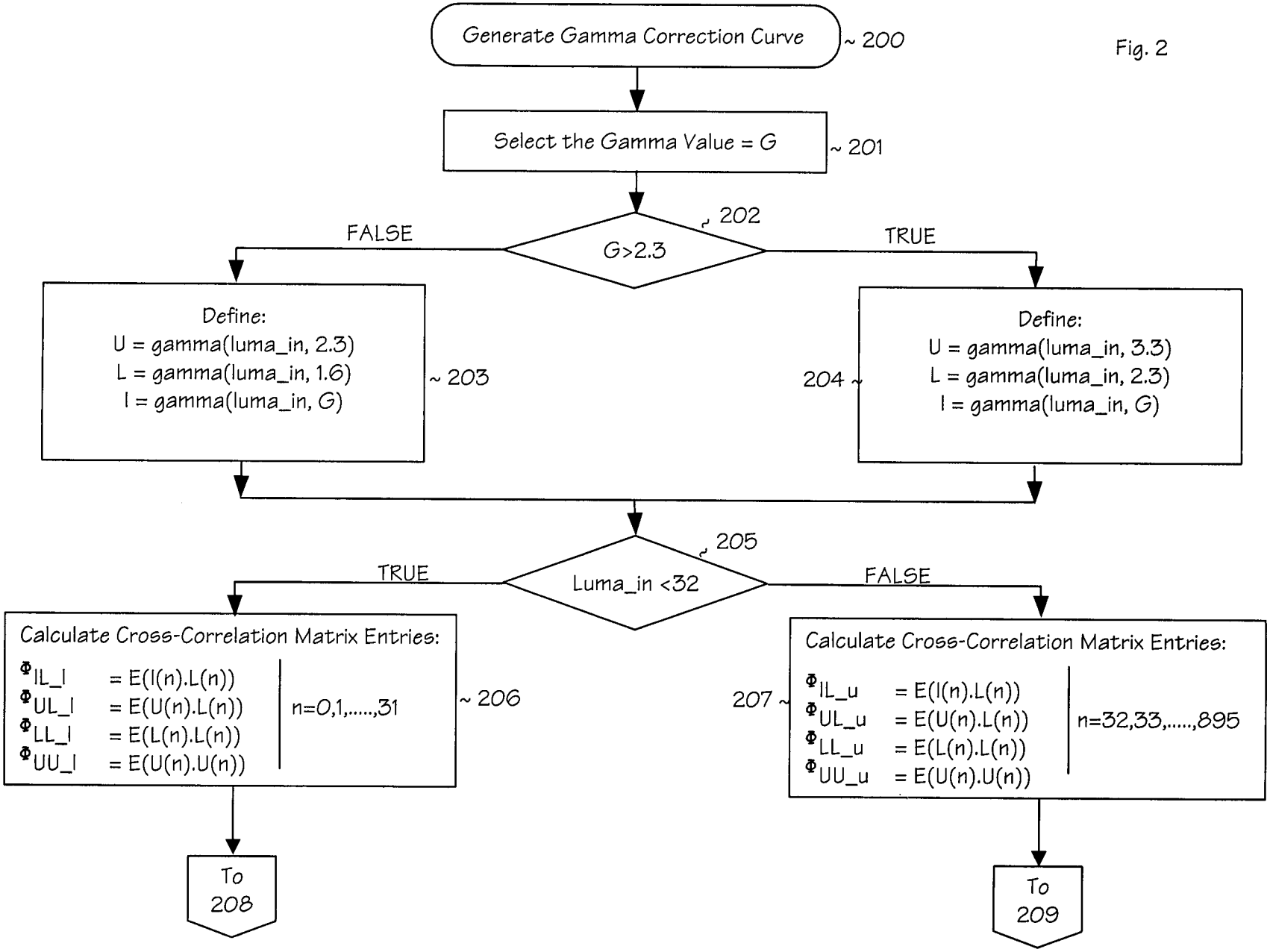
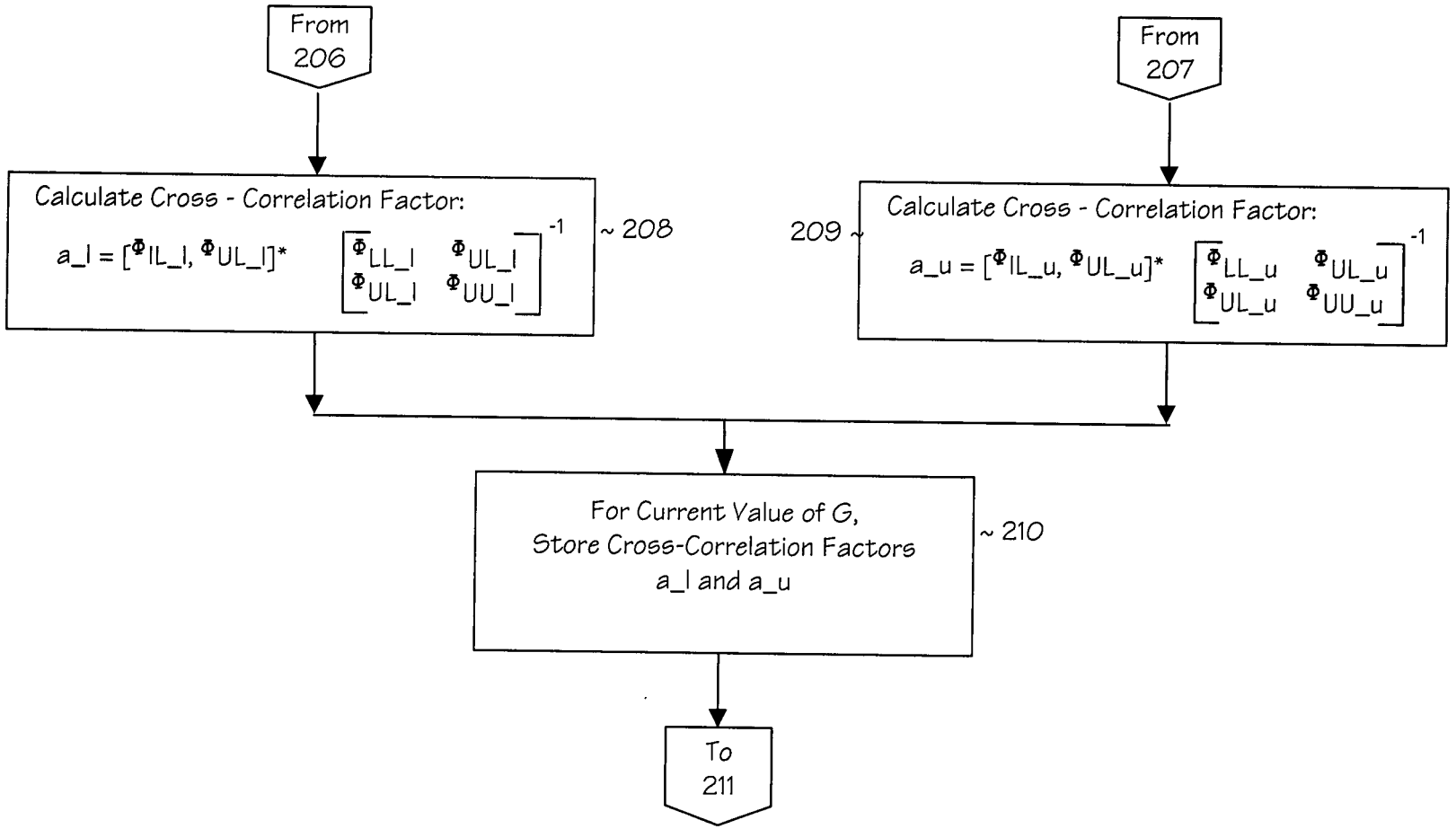
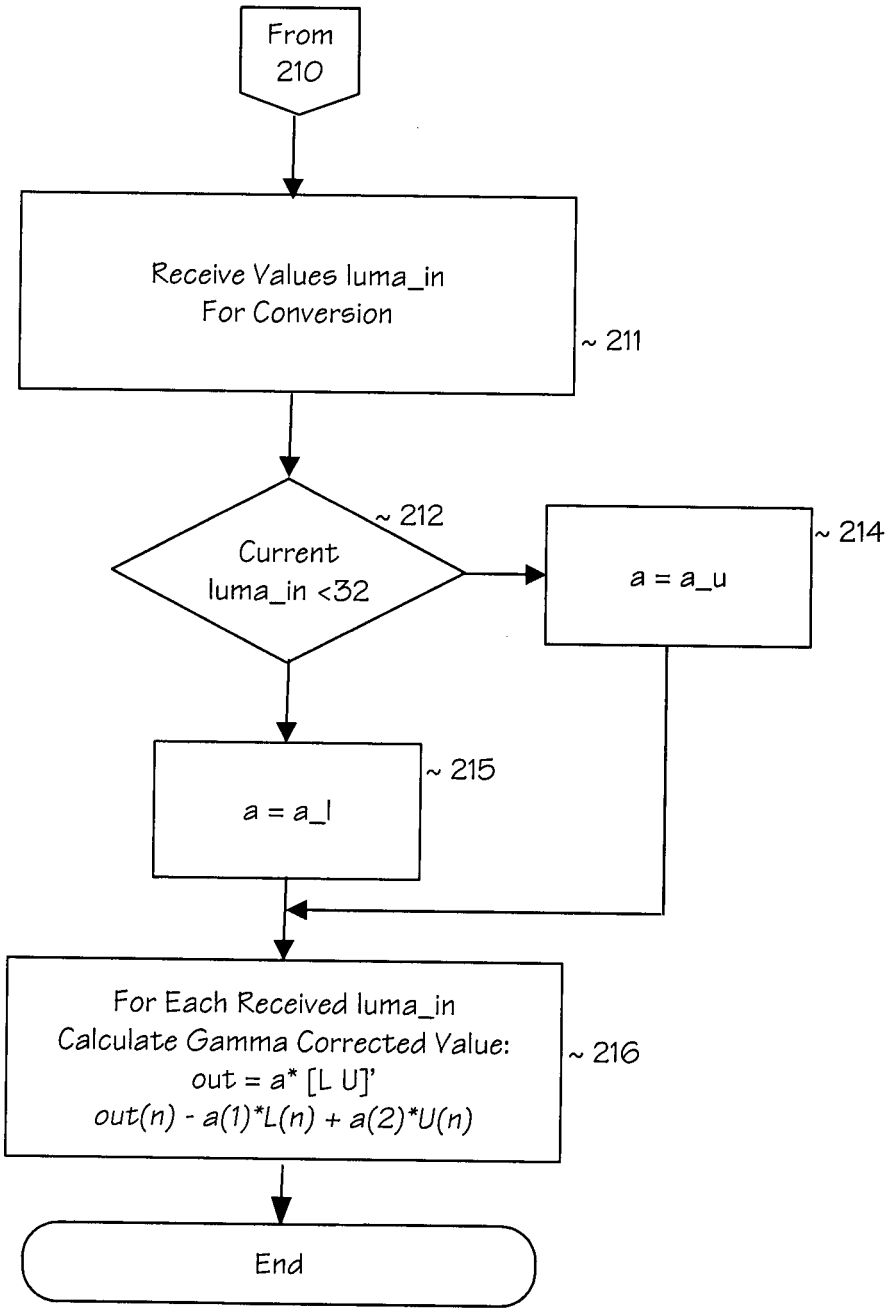

Generate Gamma Correction Curve
~ 200
Select the Gamma Value = G
~ 201
202
G>2.3
FALSE
TRUE
Define:
U = gamma(luma_in, 2.3)
L = gamma(luma_in, 1.6)
I = gamma(luma_in, G)
~ 203
204 ~
Define:
U = gamma(luma_in, 3.3)
L = gamma(luma_in, 2.3)
I = gamma(luma_in, G)
205
Luma_in <32
TRUE
FALSE
Calculate Cross-Correlation Matrix Entries:
ΦIL_I = E(I(n).L(n))
ΦUL_I = E(U(n).L(n))
ΦLL_I = E(L(n).L(n))
ΦUU_I = E(U(n).U(n))
n=0,1,.....,31
~ 206
207 ~
Calculate Cross-Correlation Matrix Entries:
ΦIL_u = E(I(n).L(n))
ΦUL_u = E(U(n).L(n))
ΦLL_u = E(L(n).L(n))
ΦUU_u = E(U(n).U(n))
n=32,33,.....,895
To 208
To 209

Fig. 2


From 206
From 207
Calculate Cross - Correlation Factor:
$a_l = [\Phi_{IL_l}, \Phi_{UL_l}]^* \begin{bmatrix} \Phi_{LL_l} & \Phi_{UL_l} \\ \Phi_{UL_l} & \Phi_{UU_l} \end{bmatrix}^{-1}$
~ 208
209 ~
Calculate Cross - Correlation Factor:
$a_u = [\Phi_{IL_u}, \Phi_{UL_u}]^* \begin{bmatrix} \Phi_{LL_u} & \Phi_{UL_u} \\ \Phi_{UL_u} & \Phi_{UU_u} \end{bmatrix}^{-1}$
For Current Value of G,
Store Cross-Correlation Factors
a_l and a_u
~ 210
To 211


From 210
Receive Values luma_in For Conversion
~ 211
Current luma_in <32
~ 212
a = a_u
~ 214
a = a_l
~ 215
For Each Received luma_in Calculate Gamma Corrected Value:
out = a* [L U]'
out(n) - a(1)*L(n) + a(2)*U(n)
~ 216
End

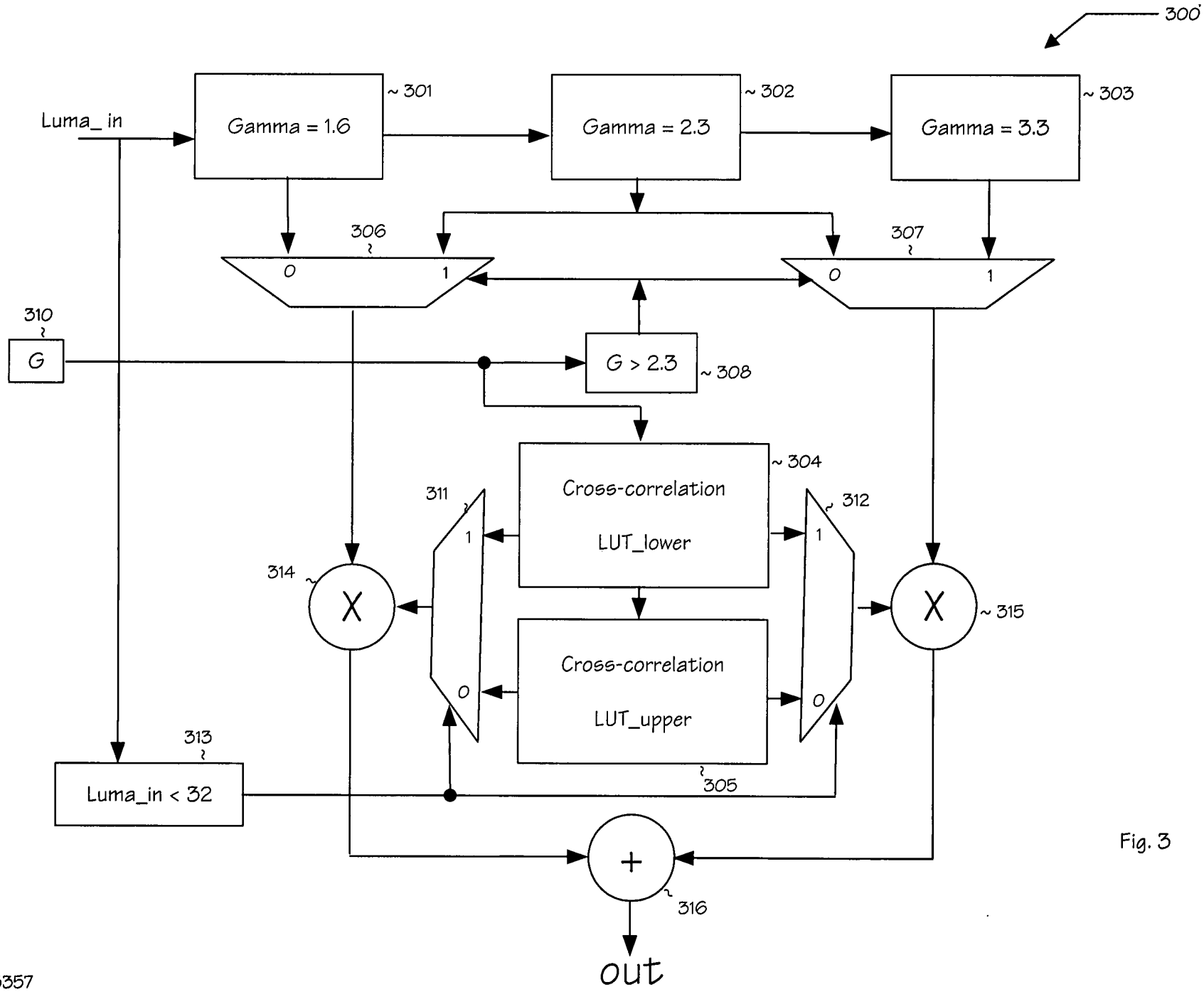


Fig. 3

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